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Timestamp: [year=2010; month=6; day=11; hr=13; min=56; sec=5; ms=89;]

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Application No: 10561236 Version No: 1.0

Input Set:

Output Set:

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Finished: 2010-06-07 13:53:26.627
Elapsed: 0 hr(s) 0 min(s) 3 sec(s) 410 ms
Total Warnings: 0
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No. of SeqIDs Defined: 61
Actual SeqID Count: 61

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<110> Grandi, Guido
Finco, Oretta
Ratti, Giulio
Bonci, Alessandro

<120> IMMUNOGENIC COMPOSITIONS FOR CHLAMYDIA
TRACHOMATIS

<130> 002441.00183

<140> 10561236
<141> 2010-06-07

<150> GB 0315020.8
<151> 2003-06-26

<150> US 60/497,649
<151> 2003-08-25

<150> GB 0402236.4
<151> 2004-02-02

<150> US 60/576,375
<151> 2004-06-01

<150> PCT/US2004/020491
<151> 2004-06-25

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<213> Chlamydia trachomatis

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Ala Ala Val Val Asp Glu Asp Tyr Lys Leu Val Tyr Gln Asn Ala Leu
35 40 45
Ser Asn Phe Ser Gly Lys Lys Gly Glu Thr Ala Phe Leu Phe Gly Asn
50 55 60
Asp His Thr Lys Glu Gln Lys Ile Val Leu Leu Gly Leu Gly Lys Ser
65 70 75 80
Glu Glu Val Ser Gly Thr Thr Val Leu Glu Ala Tyr Ala Gln Ala Thr
85 90 95
Thr Val Leu Arg Lys Ala Lys Cys Lys Thr Val Asn Ile Leu Leu Pro
100 105 110
Thr Ile Ser Gln Leu Arg Phe Ser Val Glu Glu Phe Leu Thr Asn Leu

115	120	125
Ala Ala Gly Val Leu Ser Leu Asn Tyr Asn Tyr Pro Thr Tyr His Lys		
130	135	140
Val Asp Thr Ser Leu Pro Phe Leu Glu Lys Val Thr Val Met Gly Ile		
145	150	155
Val Ser Lys Val Gly Asp Lys Ile Phe Arg Lys Glu Glu Ser Leu Phe		160
165	170	175
Glu Gly Val Tyr Leu Thr Arg Asp Leu Val Asn Thr Asn Ala Asp Glu		
180	185	190
Val Thr Pro Glu Lys Leu Ala Ala Val Ala Lys Asp Leu Ala Gly Glu		
195	200	205
Phe Ala Ser Leu Asp Val Lys Ile Leu Asp Arg Lys Ala Ile Leu Lys		
210	215	220
Glu Lys Met Gly Leu Leu Ala Ala Val Ala Lys Gly Ala Ala Val Glu		
225	230	235
Pro Arg Phe Ile Val Leu Asp Tyr Gln Gly Lys Pro Lys Ser Lys Asp		240
245	250	255
Arg Thr Val Leu Ile Gly Lys Gly Val Thr Phe Asp Ser Gly Gly Leu		
260	265	270
Asp Leu Lys Pro Gly Lys Ala Met Ile Thr Met Lys Glu Asp Met Ala		
275	280	285
Gly Ala Ala Thr Val Leu Gly Ile Phe Ser Ala Leu Ala Ser Leu Glu		
290	295	300
Leu Pro Ile Asn Val Thr Gly Ile Ile Pro Ala Thr Glu Asn Ala Ile		
305	310	315
Gly Ser Ala Ala Tyr Lys Met Gly Asp Val Tyr Val Gly Met Thr Gly		320
325	330	335
Leu Ser Val Glu Ile Gly Ser Thr Asp Ala Glu Gly Arg Leu Ile Leu		
340	345	350
Ala Asp Ala Ile Ser Tyr Ala Leu Lys Tyr Cys Asn Pro Thr Arg Ile		
355	360	365
Ile Asp Phe Ala Thr Leu Thr Gly Ala Met Val Val Ser Leu Gly Glu		
370	375	380
Ser Val Ala Gly Phe Phe Ala Asn Asn Asp Val Leu Ala Arg Asp Leu		
385	390	395
Ala Glu Ala Ser Ser Glu Thr Gly Glu Ala Leu Trp Arg Met Pro Leu		400
405	410	415
Val Glu Lys Tyr Asp Gln Ala Leu His Ser Asp Ile Ala Asp Met Lys		
420	425	430
Asn Ile Gly Ser Asn Arg Ala Gly Ser Ile Thr Ala Ala Leu Phe Leu		
435	440	445
Gln Arg Phe Leu Glu Asp Asn Pro Val Ala Trp Ala His Leu Asp Ile		
450	455	460
Ala Gly Thr Ala Tyr His Glu Lys Glu Glu Leu Pro Tyr Pro Lys Tyr		
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Ala Thr Gly Phe Gly Val Arg Cys Leu Ile His Tyr Met Glu Lys Phe		480
485	490	495
Leu Ser Lys		

<210> 2

<211> 421

<212> PRT

<213> Chlamydia trachomatis

<400> 2

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35	40	45	
Glu Asp Leu Ile Asn Pro Ala Ala Ala Thr Arg Ile Lys Lys Lys Gly			
50	55	60	
Glu Lys Phe Glu Ser Leu Glu Ala Arg Arg Lys Pro Thr Ala Asp Lys			
65	70	75	80
Ala Glu Lys Lys Ser Glu Ser Thr Glu Glu Lys Gly Asp Thr Pro Leu			
85	90	95	
Glu Asp Arg Phe Thr Glu Asp Leu Ser Glu Val Ser Gly Glu Asp Phe			
100	105	110	
Arg Gly Leu Lys Asn Ser Phe Asp Asp Ser Ser Pro Asp Glu Ile			
115	120	125	
Leu Asp Ala Leu Thr Ser Lys Phe Ser Asp Pro Thr Ile Lys Asp Leu			
130	135	140	
Ala Leu Asp Tyr Leu Ile Gln Thr Ala Pro Ser Asp Gly Lys Leu Lys			
145	150	155	160
Ser Thr Leu Ile Gln Ala Lys His Gln Leu Met Ser Gln Asn Pro Gln			
165	170	175	
Ala Ile Val Gly Arg Asn Val Leu Leu Ala Ser Glu Thr Phe Ala			
180	185	190	
Ser Arg Ala Asn Thr Ser Pro Ser Ser Leu Arg Ser Leu Tyr Phe Gln			
195	200	205	
Val Thr Ser Ser Pro Ser Asn Cys Ala Asn Leu His Gln Met Leu Ala			
210	215	220	
Ser Tyr Leu Pro Ser Glu Lys Thr Ala Val Met Glu Phe Leu Val Asn			
225	230	235	240
Gly Met Val Ala Asp Leu Lys Ser Glu Gly Pro Ser Ile Pro Pro Ala			
245	250	255	
Lys Leu Gln Val Tyr Met Thr Glu Leu Ser Asn Leu Gln Ala Leu His			
260	265	270	
Ser Val Asn Ser Phe Phe Asp Arg Asn Ile Gly Asn Leu Glu Asn Ser			
275	280	285	
Leu Lys His Glu Gly His Ala Pro Ile Pro Ser Leu Thr Thr Gly Asn			
290	295	300	
Leu Thr Lys Thr Phe Leu Gln Leu Val Glu Asp Lys Phe Pro Ser Ser			
305	310	315	320
Ser Lys Ala Gln Lys Ala Leu Asn Glu Leu Val Gly Pro Asp Thr Gly			
325	330	335	
Pro Gln Thr Glu Val Leu Asn Leu Phe Phe Arg Ala Leu Asn Gly Cys			
340	345	350	
Ser Pro Arg Ile Phe Ser Gly Ala Glu Lys Lys Gln Gln Leu Ala Ser			
355	360	365	
Val Ile Thr Asn Thr Leu Asp Ala Ile Asn Ala Asp Asn Glu Asp Tyr			
370	375	380	
Pro Lys Pro Gly Asp Phe Pro Arg Ser Ser Phe Ser Ser Thr Pro Pro			
385	390	395	400
His Ala Pro Val Pro Gln Ser Glu Ile Pro Thr Ser Pro Thr Ser Thr			
405	410	415	
Gln Pro Pro Ser Pro			
420			

<210> 3

<211> 257

<212> PRT

<213> Chlamydia trachomatis

<400> 3

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20 25 30
Ser Glu Lys Phe Ile Val Gly Thr Asn Ala Thr Tyr Pro Pro Phe Glu
35 40 45
Phe Val Asp Lys Arg Gly Glu Val Val Gly Phe Asp Ile Asp Leu Ala
50 55 60
Arg Glu Ile Ser Asn Lys Leu Gly Lys Thr Leu Asp Val Arg Glu Phe
65 70 75 80
Ser Phe Asp Ala Leu Ile Leu Asn Leu Lys Gln His Arg Ile Asp Ala
85 90 95
Val Ile Thr Gly Met Ser Ile Thr Pro Ser Arg Leu Lys Glu Ile Leu
100 105 110
Met Ile Pro Tyr Tyr Gly Glu Glu Ile Lys His Leu Val Leu Val Phe
115 120 125
Lys Gly Glu Asn Lys His Pro Leu Pro Leu Thr Gln Tyr Arg Ser Val
130 135 140
Ala Val Gln Thr Gly Thr Tyr Gln Glu Ala Tyr Leu Gln Ser Leu Ser
145 150 155 160
Glu Val His Ile Arg Ser Phe Asp Ser Thr Leu Glu Val Leu Met Glu
165 170 175
Val Met His Gly Lys Ser Pro Val Ala Val Leu Glu Pro Ser Ile Ala
180 185 190
Gln Val Val Leu Lys Asp Phe Pro Ala Leu Ser Thr Ala Thr Ile Asp
195 200 205
Leu Pro Glu Asp Gln Trp Val Leu Gly Tyr Gly Ile Gly Val Ala Ser
210 215 220
Asp Arg Pro Ala Leu Ala Leu Lys Ile Glu Ala Ala Val Gln Glu Ile
225 230 235 240
Arg Lys Glu Gly Val Leu Ala Glu Leu Glu Gln Lys Trp Gly Leu Asn
245 250 255
Asn

<210> 4

<211> 660

<212> PRT

<213> Chlamydia trachomatis

<400> 4

Met Ser Glu Lys Arg Lys Ser Asn Lys Ile Ile Gly Ile Asp Leu Gly
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Thr Thr Asn Ser Cys Val Ser Val Met Glu Gly Gly Gln Pro Lys Val
20 25 30
Ile Ala Ser Ser Glu Gly Thr Arg Thr Thr Pro Ser Ile Val Ala Phe
35 40 45
Lys Gly Glu Thr Leu Val Gly Ile Pro Ala Lys Arg Gln Ala Val
50 55 60
Thr Asn Pro Glu Lys Thr Leu Ala Ser Thr Lys Arg Phe Ile Gly Arg
65 70 75 80
Lys Phe Ser Glu Val Glu Ser Glu Ile Lys Thr Val Pro Tyr Lys Val
85 90 95
Ala Pro Asn Ser Lys Gly Asp Ala Val Phe Asp Val Glu Gln Lys Leu

	100	105	110												
Tyr	Thr	Pro	Glu	Glu	Ile	Gly	Ala	Gln	Ile	Leu	Met	Lys	Met	Lys	Glu
	115		120		125										
Thr	Ala	Glu	Ala	Tyr	Leu	Gly	Glu	Thr	Val	Thr	Glu	Ala	Val	Ile	Thr
	130		135		140										
Val	Pro	Ala	Tyr	Phe	Asn	Asp	Ser	Gln	Arg	Ala	Ser	Thr	Lys	Asp	Ala
	145		150		155				160						
Gly	Arg	Ile	Ala	Gly	Leu	Asp	Val	Lys	Arg	Ile	Ile	Pro	Glu	Pro	Thr
	165		170		175										
Ala	Ala	Ala	Leu	Ala	Tyr	Gly	Ile	Asp	Lys	Glu	Gly	Asp	Lys	Lys	Ile
	180		185		190										
Ala	Val	Phe	Asp	Leu	Gly	Gly	Gly	Thr	Phe	Asp	Ile	Ser	Ile	Leu	Glu
	195		200		205										
Ile	Gly	Asp	Gly	Val	Phe	Glu	Val	Leu	Ser	Thr	Asn	Gly	Asp	Thr	His
	210		215		220										
Leu	Gly	Gly	Asp	Asp	Phe	Asp	Gly	Val	Ile	Ile	Asn	Trp	Met	Leu	Asp
	225		230		235				240						
Glu	Phe	Lys	Lys	Gln	Glu	Gly	Ile	Asp	Leu	Ser	Lys	Asp	Asn	Met	Ala
	245		250		255										
Leu	Gln	Arg	Leu	Lys	Asp	Ala	Ala	Glu	Lys	Ala	Lys	Ile	Glu	Leu	Ser
	260		265		270										
Gly	Val	Ser	Ser	Thr	Glu	Ile	Asn	Gln	Pro	Phe	Ile	Thr	Ile	Asp	Ala
	275		280		285										
Asn	Gly	Pro	Lys	His	Leu	Ala	Leu	Thr	Leu	Thr	Arg	Ala	Gln	Phe	Glu
	290		295		300										
His	Leu	Ala	Ser	Ser	Leu	Ile	Glu	Arg	Thr	Lys	Gln	Pro	Cys	Ala	Gln
	305		310		315				320						
Ala	Leu	Lys	Asp	Ala	Lys	Leu	Ser	Ala	Ser	Asp	Ile	Asp	Asp	Val	Leu
	325		330		335										
Leu	Val	Gly	Gly	Met	Ser	Arg	Met	Pro	Ala	Val	Gln	Ala	Val	Val	Lys
	340		345		350										
Glu	Ile	Phe	Gly	Lys	Glu	Pro	Asn	Lys	Gly	Val	Asn	Pro	Asp	Glu	Val
	355		360		365										
Val	Ala	Ile	Gly	Ala	Ala	Ile	Gln	Gly	Gly	Val	Leu	Gly	Gly	Glu	Val
	370		375		380										
Lys	Asp	Val	Leu	Leu	Leu	Asp	Val	Ile	Pro	Leu	Ser	Leu	Gly	Ile	Glu
	385		390		395				400						
Thr	Leu	Gly	Gly	Val	Met	Thr	Pro	Leu	Val	Glu	Arg	Asn	Thr	Thr	Ile
	405		410		415										
Pro	Thr	Gln	Lys	Lys	Gln	Ile	Phe	Ser	Thr	Ala	Ala	Asp	Asn	Gln	Pro
	420		425		430										
Ala	Val	Thr	Ile	Val	Val	Leu	Gln	Gly	Glu	Arg	Pro	Met	Ala	Lys	Asp
	435		440		445										
Asn	Lys	Glu	Ile	Gly	Arg	Phe	Asp	Leu	Thr	Asp	Ile	Pro	Pro	Ala	Pro
	450		455		460										
Arg	Gly	His	Pro	Gln	Ile	Glu	Val	Thr	Phe	Asp	Ile	Asp	Ala	Asn	Gly
	465		470		475				480						
Ile	Leu	His	Val	Ser	Ala	Lys	Asp	Ala	Ala	Ser	Gly	Arg	Glu	Gln	Lys
	485		490		495										
Ile	Arg	Ile	Glu	Ala	Ser	Ser	Gly	Leu	Lys	Glu	Asp	Glu	Ile	Gln	Gln
	500		505		510										
Met	Ile	Arg	Asp	Ala	Glu	Leu	His	Lys	Glu	Glu	Asp	Lys	Gln	Arg	Lys
	515		520		525										
Glu	Ala	Ser	Asp	Val	Lys	Asn	Glu	Ala	Asp	Gly	Met	Ile	Phe	Arg	Ala
	530		535		540										
Glu	Lys	Ala	Val	Lys	Asp	Tyr	His	Asp	Lys	Ile	Pro	Ala	Glu	Leu	Val
	545		550		555				560						

Lys Glu Ile Glu Glu His Ile Glu Lys Val Arg Gln Ala Ile Lys Glu
 565 570 575
 Asp Ala Ser Thr Thr Ala Ile Lys Ala Ala Ser Asp Glu Leu Ser Thr
 580 585 590
 His Met Gln Lys Ile Gly Glu Ala Met Gln Ala Gln Ser Ala Ser Ala
 595 600 605
 Ala Ala Ser Ser Ala Ala Asn Ala Gln Gly Gly Pro Asn Ile Asn Ser
 610 615 620
 Glu Asp Leu Lys Lys His Ser Phe Ser Thr Arg Pro Pro Ala Gly Gly
 625 630 635 640
 Ser Ala Ser Ser Thr Asp Asn Ile Glu Asp Ala Asp Val Glu Ile Val
 645 650 655
 Asp Lys Pro Glu
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<210> 5
 <211> 254
 <212> PRT
 <213> Chlamydia trachomatis

<400> 5

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Lys Met Ile Arg Leu Met Arg Val Lys Lys Glu His Gln Asn Glu Leu			
20 25 30			
Ala Lys Ile Gln Ala Leu Lys Thr Asp Ile Arg Arg Lys Val Glu Glu			
35 40 45			
Lys Glu Gln Glu Met Glu Lys Leu Lys Asp Gln Ile Lys Gly Gly Glu			
50 55 60			
Lys Arg Ile Gln Glu Ile Ser Asp Gln Ile Asn Lys Leu Glu Asn Gln			
65 70 75 80			
Gln Ala Ala Val Lys Lys Met Asp Glu Phe Asn Ala Leu Thr Gln Glu			
85 90 95			
Met Thr Ala Ala Asn Lys Glu Arg Arg Thr Leu Glu His Gln Leu Ser			
100 105 110			
Asp Leu Met Asp Lys Gln Ala Gly Ser Glu Asp Leu Leu Ile Ser Leu			
115 120 125			
Lys Glu Ser Leu Ser Ser Thr Glu Asn Ser Ser Ala Ile Glu Glu			
130 135 140			
Glu Ile Arg Glu Asn Ile Arg Lys Ile Asn Glu Glu Gly Arg Ser Leu			
145 150 155 160			
Leu Ser Gln Arg Thr Gln Leu Lys Glu Thr Thr Asp Pro Glu Leu Phe			
165 170 175			
Ser Ile Tyr Glu Arg Leu Leu Asn Asn Lys Lys Asp Arg Val Val Val			
180 185 190			
Pro Ile Glu Asn Arg Val Cys Ser Gly Cys His Ile Ala Leu Thr Pro			
195 200 205			
Gln His Glu Asn Leu Val Arg Lys Gln Asp His Leu Val Phe Cys Glu			
210 215 220			
His Cys Ser Arg Ile Leu Tyr Trp Gln Glu Leu Gln Ser Pro Ser Ala			
225 230 235 240			
Glu Gly Ala Thr Thr Lys Arg Arg Arg Arg Arg Thr Ala Val			
245 250			

<210> 6
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 <212> PRT

<213> Chlamydia trachomatis

<400> 6

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20	25	30	
Arg Cys Leu Glu Glu Ser Ala Leu Gly Lys Lys Glu Ser Ala Glu Phe			
35	40	45	
Glu Lys Met Lys Asn Gln Phe Ser Asn Ser Met Gly Lys Met Glu Glu			
50	55	60	
Glu Leu Ser Ser Ile Tyr Ser Lys Leu Gln Asp Asp Asp Tyr Met Glu			
65	70	75	80
Gly Leu Ser Glu Thr Ala Ala Ala Glu Leu Arg Lys Lys Phe Glu Asp			
85	90	95	
Leu Ser Ala Glu Tyr Asn Thr Ala Gln Gly Gln Tyr Tyr Gln Ile Leu			
100	105	110	
Asn Gln Ser Asn Leu Lys Arg Met Gln Lys Ile Met Glu Glu Val Lys			
115	120	125	
Lys Ala Ser Glu Thr Val Arg Ile Gln Glu Gly Leu Ser Val Leu Leu			
130			